Prominence is also given to higher educational matters, and the man of science will find much in this section to interest him.

MESSRS. CHARLES GRIFFIN AND CO., LTD., have published the twenty-second annual issue, that for 1905, of the "Official Year-book of the Scientific and Learned Societies of Great Britain and Ireland." This useful work of reference is already well known as a trustworthy guide to the scientific societies and their work. Though the volume is very comprehensive, we miss a reference to the Geographical Association and to the Public Schools Science Masters' Association. The editor might consider the advisability of including associations dealing with educational science.

A NEW vernier rule and scale designed by Mr. S. Irwin Crookes has been received from the maker—Mr. W. H. Harling, 47 Finsbury Pavement, E.C. The rule is divided on one face into inches and eighths of an inch and centimetres and millimetres; the other face has on the edges divisions and numbers representing degrees from o to 150, and a barometer scale reading from 20 to 32. A metal vernier slides in a slot cut through the middle of the length of the rule, and it is divided in four different ways to read fractions of the four scales on the rule. The device should be valuable in making students familiar with the use of the vernier on many precise scientific instruments.

THE second annual issue of the "Science Year Book" (5s. net), edited by Major B. F. S. Baden-Powell, has been published by Messrs. King, Sell and Olding, Ltd. Several new features have been introduced, and every care appears to have been taken to make the volume serviceable to men of science and others interested in natural knowledge. The year book includes a diary containing at the head of every daily page the astronomical and meteorological particulars of the day likely to be of interest, and blank spaces for recording results of observations. Other characteristics are tables of useful data, an astronomical ephemeris, maps of the constellations, charts of planetary positions during 1906, and various statistics and notes referring to matters not usually included in ordinary calendars and almanacs. There are also short summaries of progress in science during last year, an eclectic bibliographical directory, and a list of scientific books published last year. The year book is thus a convenient and helpful companion for the study, laboratory, or observatory.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN JANUARY: —

Jan. 4.   4h. 12m. to 5h. 10m.   Moon occults ξ^2 Ceti (mag. 4·3).

,, 4.   15h.   Mercury at greatest elongation, 23° 0′ W.

,, 5.   5h.   Venus in conjunction with Uranus, Venus 0° 6′ N.

,, 5.   14h. 45m. to 15h. 16m.   Moon occults f Tauri (mag. 4·3).

,, 6.   14h. 52m. to 15h. 40m.   Moon occults γ Tauri (mag. 3·9).

,, 14.   11h. 1m. to 11h. 58m.   Moon occults σ Leonis (mag. 4·1).

,, 15.   Venus. Illuminated portion of disc = 0·993. Of Mars = 0·923.

,, 15.   11h. 2m.   Minimum of Algol (β Persei).

,, 18.   7h. 51m.   Minimum of Algol (β Persei).

,, 26. 8h.   Saturn in conjunction with Moon. Saturn 0° 31′ S.

,, 28. 6h. 17m. to 8h. 14m.   Transit of Jupiter's Sat. III.

A FOURTH NEW COMET (1905e).—A telegram from the Kiel Centralstelle announces the discovery of another new comet by the Flagstaff observers. This object was discovered, presumably, from the examination of a photograph, by Mr. Lowell, who gives its position on November 29, 1905, at 9h. 27m. (Flagstaff M.T.), as follows :—

R.A. = 22h. 32·2m., dec. = − 8° 42′.

The apparent motion of the comet was either in a north-east or a south-west direction, and the photograph showed that the body was accompanied by two tails.

The above position is in the constellation Aquarius, about half-way between ϕ Aquarii and ι Ceti.

NEW ELEMENTS AND EPHEMERIS FOR COMET 1905c.—A new set of elements and a daily ephemeris for comet 1905c (Giacobini) are given by Herr E. Strömgren in No. 4062 of the *Astronomische Nachrichten*.

These elements, and an extract from the ephemeris, are given below.

$$T = 1906 \text{ Jan. } 22·666 \ (M.T. \ Berlin).$$

$$\left.\begin{array}{l} \infty = 198°\ 21·67 \\ \Omega = 91\ 55·27 \\ i = 43\ 37·08 \end{array}\right\} 1905·0$$

$$\log q = 9·34978$$

Ephemeris (12h. M.T. Berlin).

1906	α (true) h. m. s.	δ (true)	$\log \gamma$	$\log \Delta$	Brightness
Jan. 5	17 23 54	− 1 35·7	9·7701	0·0425	7·97
,, 7	17 39 28	− 3 53·5	9·7313	0·0425	9·53
,, 9	17 55 31	− 6 15·9	9·6881	0·0441	11·53
,, 11	18 12 10	− 8 42·5	9·6398	0·0473	14·20
,, 13	18 29 33	− 11 12·8	9·5856	0·0520	17·83

The above positions are plotted on the accompanying chart, which shows approximately the apparent positions of the comet among the stars on the dates indicated.
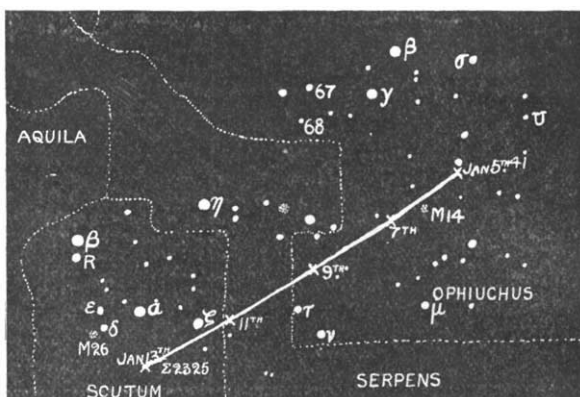

FIG. 1.—Path of Comet 1905c, January 5-13, 1906.

THE EXPECTED RETURN OF COMET 1892 V.—In *Circular* No. 84 from the Kiel Centralstelle, M. J. Coniel gives several provisional search-ephemerides, showing positions up to January 6·5, for comet 1892 V.

This comet was discovered by Holmes on November 6, 1892, and was observed during its apparition in 1899, when it passed through its perihelion on April 28. Its period is given by Zwiers as 6·874 years.

MICROMETER MEASURES OF DOUBLE STARS.—The results of a series of micrometer measures of eighty-three double stars, taken from the Struve, Burnham, and Hussey catalogues, are published in No. 4054 of the *Astronomische Nachrichten* by Herr H. E. Lau. The observations were made during March, 1905, with the Urania-Sternwarte (Copenhagen) refractor, of 246 mm. aperture and 4·1 metres focal length, fitted with a Cooke position micrometer.

For each double, the time of observation, the position-angle, the distance, the magnitudes of the components and the power used are given, whilst short comparisons with other measures and notes regarding the probable character and motion are generally added.

French Astronomical " Annuaires."—We have received two French " Annuaires " which are of particular interest to astronomical workers, the one being the " Annuaire du Bureau des Longitudes " (price 1.50 francs), the other the " Annuaire astronomique et météorologique " (price 1.50 francs), which is published by M. Flammarion.

The former volume contains 352 pages devoted to astronomical matters, in addition to which there are three appendices (188 pages) dealing with eclipse observations. In the first of these M. Bigourdan gives a large number of summarised instructions concerning the observations which may be made during eclipses, pointing out the most suitable observations to be undertaken with the instruments readily available. In the second the same writer gives an extremely interesting summary of the observations made in all parts of the shadow-track during the recent eclipse, whilst the third appendix is devoted to a short account, by Prof. Janssen, of his own observations made in Spain on August 30.

M. Flammarion's " Annuaire " will be found to be especially suitable for amateur observers, some interesting phenomenon being given for every day in the year. It contains practically all the data to which the amateur has any need to refer, and the *résumé* of the more important astronomical advances during the past year should prove both interesting and useful.

PRIZES AWARDED AND PROPOSED BY THE PARIS ACADEMY OF SCIENCES.

A T the annual meeting of the academy of December 18, 1905, the president delivered his annual address, and announced the list of prizes awarded in 1905 as follows :—

The Francœur prize is awarded to M. Stouff, for the whole of his mathematical works.

A Montyon prize to M. Mesnager, for his theoretical and experimental work on the theory of elasticity and the resistance of materials. The Poncelet prize to M. Lallemand, for his work on the figure of the earth and for his improvements in geodesic instruments.

The extraordinary prize of 6000 francs has been divided, Colonel Gossot and M. Liouville receiving 4000 francs, for their work on ballistics; M. Carré 1000 francs, for improvements in the navigation of submarines; and M. Merlu 1000 francs, for improvements in the furnaces of marine boilers. The Plumey prize is divided between M. Maurice (2500 francs), for a device for the recuperation of heat in boilers, and M. de Maupeou d'Ableiges (1000 francs), for his investigations of the theory of impact.

The Pierre Guzman prize is not awarded, but M. Perrotin receives 2000 francs from this foundation for the whole of his astronomical work. The Lalande prize is awarded to Prof. W. H. Pickering, for his astronomical work, and especially for his brilliant researches on the satellites of Saturn; the Valz prize to M. Giacobini, for his work on comets; and the G. de Pontecoulant prize to Prof. J. C. Kapteyn, for the whole of his astronomical researches. Of the two memoirs on the theory of comets presented for the Damoiseau prize, that of M. Fayet is adjudged the better, M. Fabry, the author of the second memoir, receiving a prize from the funds of the Guzman prize.

The Gay prize is given to Dr. Cureau, for his accurate geodesic measurements in Africa. The Tchihatchef prize to the late M. Massenet, for geodesic work in Cochin China.

M. Jumau receives the Hébert prize for his book on electric accumulators; M. Georges Urbain the Hughes prize, for his researches on the rare earths; M. Henri Abraham the Gaston Planté prize, for his researches and books; and M. Gouy the La Caze prize, for the whole of his original work.

The Jecker prize is awarded to MM. Sabatier and Senderens, for their researches on the catalytic action of metals; Montyon prizes (unhealthy trades) to M. Donard, for his method of treating slaughter-house refuse, and to M. Carles, for his method of utilising wine residues; the La Caze prize to M. Albert Colson, for the whole of his researches; the Bordin prize to M. Paul Lebeau, for his researches on silicides. The Cahours prize is divided between M. Binet du Jassoneix and M. Kling.

M. G. Friedel receives the Delesse prize for his work in mineralogy; M. Gustave Dollfus the Fontannes prize, for his researches on Tertiary fossils; and M. Marcellin Boule the Alhumbert prize, for his work on the determination of the period of the latest volcanic eruptions in central France.

The grand prize of the physical sciences is awarded to M. Dangeard, for his researches on the development of the egg in the Ascomycetes and Basidiomycetes; the Desmazières prize to M. Ferdinand Renauld, for his memoir on the flora of Madagascar; the Thore prize to M. de Itsvanffi, for his memoirs on the fungi attacking the European vine, the Montagne prize being divided between M. Lutz (1000 francs) and M. Gallaud (500 francs).

In anatomy and zoology, M. C. Gravier receives the Savigny prize.

A Montyon prize is divided between M. L. C. Maillard (the indoxylic colouring matters of human urine), M. Albert Malherbe (researches on sarcoma), and M. Albert Le Play (experimental researches on intestinal poisons). Mentions are accorded to MM. H. Guilleminot, J. Beolt, and Edmond Loison. The Barbier prize is divided between M. J. Dechery and G. Rosenthal, M. Scrini receiving a mention. The interest on the funds of the Bréant prize is divided between M. Vincent, M. Martel, and Dr. Remlinger. The Godard prize is accorded to Dr. A. Hogge; the Baron Larrey prize to M. H. Nimier, with very honourable mention to M. Marix; the Bellion prize to Dr. Pressat (malaria and mosquitoes) and MM. Alquier and Drouineau (glycogen and rational nutrition with sugar); the Mège prize to M. Beni-Barde, for his book on hydrotherapeutics; the Serres prize to M. F. Henneguy. The Dusgate prize is not awarded, but M. Onimus receives a very honourable mention.

In physiology the Montyon prize is shared by M. J. Lefèvre and M. J. Laurent. The Philipeaux prize is awarded to M. Victor Henri for his quantitative researches on diastases, M. L. Butte being accorded a mention for his researches on the glycogenic functions of the liver. The Lallemand prize is divided between M. and Mme. Lapicque and M. Jules Voisin, M. Crouzon receiving a very honourable mention. The question set for the Pourat prize was the origin of muscular glycogen. The only paper received on this subject was by M. Maignon, to whom the prize is awarded.

A Montyon prize for statistics is awarded to M. Edmond Gain, with a very honourable mention to M. Jules Fleury.

The Binoux prize is awarded to M. Paul Tannery.

M. Adolph Lieben receives the Lavoisier medal; MM. Senderens, Donard, Lebeau, Jumau, Urbain, Abraham, Gouy, Canovetti, and Leduc the Berthelot medal. The Trémont prize is awarded to M. Ch. Frémont, for his researches in the domain of mechanics; the Gegner prize to M. J. H. Fabre; the Lannelongue prize to Mme. Beclard and Mme. Cusco; the Wilde prize to M. Canovetti and M. Leduc (in equal parts); the Saintour prize to M. Édouard Piette and M. Marchis; the Petit D'Ormoy prize to M. Émile Borel (mathematical sciences) and M. Julien Costantin (natural sciences); the prize founded by Mme. la Marquise de Laplace to M. Fortier; and the Félix Rivot prize to MM. Fortier, Rodhain, Frontard, and Lefranc.

The subjects proposed by the academy for prizes for 1907 are as follows :—

The Francœur prize (1000 francs), for work or discoveries useful to the progress of the science of pure or applied mathematics; the Bordin prize (3000 francs), for the solution of a problem in the theory of algebraic surfaces; the Vaillant prize (4000 francs), for the integration of the equation

$$\frac{\partial^4 u}{\partial x^4} + 2\frac{\partial^4 u}{\partial x^2 \partial y^2} + \frac{\partial^4 u}{\partial y^4} = f(x, y)$$

under specified conditions; and the Poncelet prize (2000 francs), under conditions similar to those of the Francœur prize.

A Montyon prize (700 francs), for the invention or improvement of instruments useful to the progress of agriculture, the mechanical arts or sciences.

The extraordinary prize of 6000 francs, for an invention or discovery tending to increase the efficacy of the French naval forces; the Plumey prize (4000 francs), for improvements in the steam engine or any invention contributing to the progress of steam navigation.